CONSOLIDATED INFORMATION TECHNOLOGY SERVICES TASK ASSIGNMENT (TA)

1. **TITLE:** (D318) LARC AIRSPACE AND TRAFFIC OPERATIONS SIMULATION (ATOS) SOFTWARE DEVELOPMENT

TA No:	305-Rev1	
Task Area Monitor:	**Alternate Task Area Monitor:**	
NASA POC:	**Software Control Class:**	Low Control
Type of Task:	Non-Recurring Task	

2. BACKGROUND

The Airspace and Traffic Operations Simulation (ATOS) is a multi-fidelity flight simulation at LaRC that supports research of air traffic operations within future airspace environments. Hosted by the Air Traffic Operations Laboratory (ATOL) at the NASA Langley Research Center, ATOS is a workstation-based simulation that serves as a test bed for investigations of future distributed air/ground traffic management concepts and their associated decision support tools. Each aircraft, its advanced communication and surveillance systems, and its avionics system prototypes are modeled on individual workstations which are networked together. It can support human-in-the-loop experiments using pilot test subjects or batch experiments using a pilot model (simulation) that replaces the human operator. Each individual aircraft simulation is referred to as an Aircraft Simulation for Traffic Operations Research (ASTOR). ATOS/ATOL currently supports simulations containing up to 400 ASTORs and up to 1000 additional lower-fidelity traffic aircraft. ATOS/ATOL makes use of AviationSimNet® to perform experiments jointly with other simulation facilities. AviationSimNet is an aviation community project to define an open, standards-based set of object models, protocols, and software for distributed air traffic management simulation over the Internet.

3. OBJECTIVE

The purpose of this task is to develop functional enhancements to ATOS that will be required for research experiments resulting from future activities. The Contractor shall provide the services necessary for the development of requirements and software supporting new functional capabilities. The scope of this task encompasses the following:

1. Laboratory connectivity to other simulation facilities;
2. Provision of engineering consulting services to VMASC that is under contract with NASA.

The LaRC manager responsible for a particular project and the Contractor personnel assigned to that project shall work cooperatively and iteratively, as required, using such techniques as rapid prototyping, to ensure fulfillment of the mission/task objectives from detailed software task requirements (including software quality and schedule) as specified in the appropriate Software Requirements Document (SRD) for that particular project.

The Contractor shall provide the following (as required):

a) Design and development of new software packages to meet specified requirements;

b) Design and development of new systems integrated from hardware, commercial software, and newly developed applications;

c) Development of software applications within existing system environments;

d) Modifications to existing software to change or add to its functionality;

e) Software support to research including the continuing evolution of algorithms and techniques.

The following activities shall be undertaken by the Contractor in the planning and execution of the work:

a) Requirements Analysis and Planning;

b) System Integration;

c) Software Design and Development;

d) Software Modification;

e) Quality Assurance and Software Testing;

f) Planning for Installation, Operations, or Maintenance Services;

g) Documentation;

h) Problem Analysis;

i) Process Improvement.

These activities shall be incrementally executed as funding and schedule permits.

4. GENERAL IT SUPPORT SERVICES

General IT Support Services Performance Metrics

Performance Standard: Deliverables are made on schedule and meet project requirements and acceptance criteria.

Performance Metrics:

Exceeds: All deliverables are made on or ahead of schedule, The application meets the TA requirements without exception. No anomalies are found during testing. Capabilities not originally planned in this document are nonetheless incorporated.

Meets: Any delays in delivery are minor and are made up within the overall schedule. Only minor deficiencies are found and are corrected within the development schedule.

Fails: The delivered software is completely rejected by the customer.

5. SYSTEM AND APPLICATION DEVELOPMENT SERVICES

Project Title: AviationSimNet Development

LaRC Software Manager:

Software Software Control Class: Low

Responsibilities of Contractor and LaRC personnel:The Government will provide the Contractor with access to the Air Traffic Operations Lab and all necessary computer software and computer equipment located at Langley Research Center for development, integration and test of all software developed in support of this TA. The availability of any Government-provided software and documentation will depend on release dates, rights in data, and may require non-disclosure agreements to be executed. Other information may also be provided as necessary.

Requirements:
a. The Contractor shall update the ATOS AviationSimNet instantiation to the standard that is current as of the start of the task;
b. The Contractor shall perform a connectivity test after the update. The connectivity test shall be with MITRE CAASD.

Deliverables:

Number	Deliverable Item	Deliverable Schedule
1	AviationSimNet compliant software	as required through 4/27/2010

Project Title: VMASC Support

LaRC Software Manager:

Software Software Control Class: Low

Responsibilities of Contractor and LaRC personnel:The Government will provide the Contractor with access to the Air Traffic Operations Lab and all necessary computer software and computer equipment located at Langley Research Center for development, integration and test of all software developed in support of this TA. The availability of any

Government-provided software and documentation will depend on release dates, rights in data, and may require non-disclosure agreements to be executed. Other information may also be provided as necessary.

Requirements:
a. The Contractor shall provide technical consulting at the Old Dominion University Virginia Modeling, Analysis and Simulation Center (VMASC) facility in support of research and development related to ATOS;
b. The Contractor shall maintain configuration control of all software delivered from VMASC to NASA;
c. The Contractor shall support VMASC in developing, integrating and testing these ATOS capabilities;
d. The Contractor shall perform all duties associated with its responsibility for design review, system integration, configuration management, and system level acceptance testing of VMASC products;
e. The Contractor will provide consultation to VMASC personnel as needed to ensure compatibility with ATOS requirements.

6. WORK-AREA SPECIFIC SERVICES

None required.

7. Exhibit A

None required.

8. SPECIAL SECURITY REQUIREMENTS

None required.

9. SOFTWARE ENGINEERING PROCESS REQUIREMENTS

None required.

10. JOINT REVIEW SCHEDULE

Reviews will be determined by the NASA TAM in coordination with the external parties involved with the consulting and connectivity activities.

11. PERIOD OF PERFORMANCE

This TA is effective from 02/03/09 to 04/27/10

12. TECHNICAL PERFORMANCE RATING

The contractor delivers products (applications, data, etc.) within costs and schedule. Product quality meets customer expectations.

Quality: 50%   Timeliness: 50%

13. RESPONSE REQUIREMENTS

The Task Plan shall address the contractor's specific work plans, associated estimated labor hours, cost and schedule.

14. GOVERNMENT ESTIMATED COST

15. FUNDING INFORMATION

Funding has not been entered for this TA.

16. MILESTONES

None required.

17. DELIVERABLES

Number	Deliverable Item	Deliverable Schedule
1	AviationSimNet compliant software	as required through 4/27/2010

18. FILE ATTACHMENTS

None.